Exercise 1

Let h be a function defined by $h(x) = \dfrac{2\sin(3x)}{5\sqrt{3x^2}}$. Which of the following definitions of f and g satisfy $(f \cdot g)(x) = h(x)$?

Multiple Choice:

(a) $f(x) = 2\sin(3x)$ *and* $g(x) = 5\sqrt{3x^2}$

(b) $f(x) = \dfrac{1}{2\sin(3x)}$ *and* $g(x) = 5\sqrt{3x^2}$

(c) $f(x) = \sin(3x)$ *and* $g(x) = \dfrac{10}{\sqrt{3x^2}}$

(d) $f(x) = \dfrac{2\sin(3x)}{5}$ *and* $g(x) = \dfrac{1}{\sqrt{3x^2}}$ ✓

Let h be a function defined by $h(x) = 2x^2 + 2x - 2$. Which of the following definitions of f and g satisfy $(f + g)(x) = h(x)$?

Multiple Choice:

(a) $f(x) = 2x^2$ *and* $g(x) = 2x + 2$

(b) $f(x) = x^2$ *and* $g(x) = x^2 + 2x$

(c) $f(x) = x^2 + x - 1$ *and* $g(x) = x^2 + x - 1$ ✓

(d) $f(x) = x^2$ *and* $g(x) = x^2 + 2x - 1$

Let h be a function defined by $h(x) = \sin(x) - \cos(x)$. Which of the following definitions of f and g satisfy $(f - g)(x) = h(x)$?

Multiple Choice:

(a) $\sin(x) + \tan(x)$ *and* $g(x) = \cos(x) + \tan(x)$ ✓

(b) $f(x) = 2\sin(x)$ *and* $g(x) = \cos(x)$

(c) $f(x) = \sin(x)$ *and* $g(x) = -\cos(x)$

(d) $f(x) = -\cos(x)$ *and* $g(x) = \sin(x)$